

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
22 April 2004 (22.04.2004)

PCT

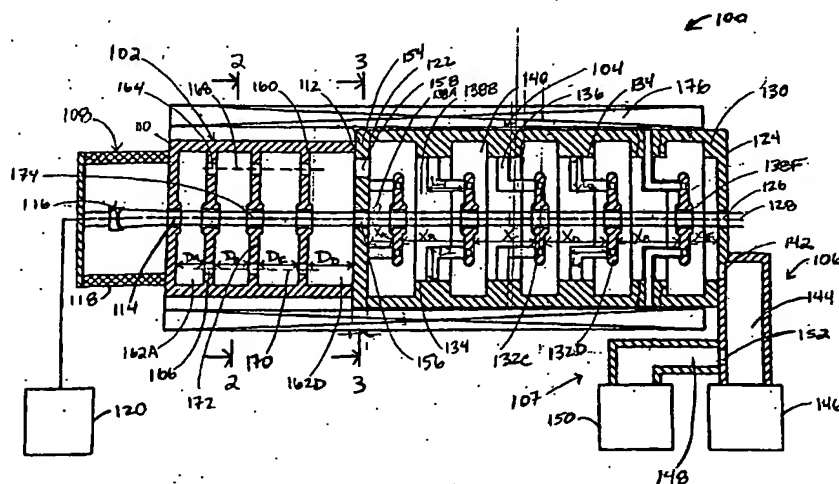
(10) International Publication Number  
WO 2004/033613 A3

- (51) International Patent Classification<sup>7</sup>: H05H 9/00 107005 (RU). ROZANOV, Nikolay, E. [RU/RU]; 504-49/3, Sudostroitel'naja Str., Moscow 115407 (RU).
- (21) International Application Number: PCT/US2003/032447 (74) Agent: COURSEY, Stevan, R.; Troutman Sanders LLP, Suite 5200, 600 Peachtree Street, N.E., Atlanta, GA 30308-2216 (US).
- (22) International Filing Date: 14 October 2003 (14.10.2003)
- (25) Filing Language: English (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (26) Publication Language: English
- (30) Priority Data: 60/418,198 11 October 2002 (11.10.2002) US (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
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Published:  
— with international search report

[Continued on next page]

(54) Title: STANDING-WAVE ELECTRON LINEAR ACCELERATOR



(57) Abstract: A particle accelerator system, including apparatuses and methods, for producing a beam of bunched charged particles at high intensities and with minimal energy dispersion comprises a bunching section having a plurality of bunching cavities, an accelerating section having a plurality of accelerating and coupling cavities, and an electromagnetic drive subsystem having a single radio-frequency (RF) generator coupled to the accelerating section at a single location. The accelerating and bunching sections are directly coupled and share a common wall, which may have a resonant coupling cavity therein, such that charged particles bunch in the bunching section and travel through the common wall into the accelerating section where they are accelerated and exit the particle accelerator system as a beam of bunched charged particles. Preferably, a phase shift of one hundred-eighty degrees (180°) (or it radians) is created between the electric fields of successive bunching cavities in the bunching section.